

## PATENT SPECIFICATION



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230,659

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## PROVISIONAL SPECIFICATION.

## Improvements in and relating to Collapsible Filling Funnels for Tanks and other Containers.

I, LESLIE LYNE DIXSON, Elmstone House, Ramsgate, Kent, British, do hereby declare the nature of this invention to be as follows:—

5 A funnel which shall be detachable from the petrol container for purposes of repair or cleaning yet shall be always in the position where a funnel is required, that is to say the aperture which is provided in the tank to receive the liquid with which the said tank is filled. To  
10 accomplish my purpose I provide a tube two inches in diameter, or such other size as shall be convenient to fill the  
15 aperture. The tube shall be eight inches in length or other convenient size to contain the various parts hereafter described, and upon the inner side at the top edge thereof I provide a shoulder or flange  
20 to form a stop to prevent the hereafter described funnel passing beyond the desired position. On the outer edge or if needs be upon the inner surface of the said tube I provide a thread or threads  
25 which shall fit the inner or outer thread of the aperture which shall be of the same standard gauge and correspond to the thread or threads upon the cap of the tank aperture. Above the threaded  
30 portion I provide a flange which has recessed in its side two slots arranged to form a bayonet joint for the cap or cover with a disc of soft material to secure a certain tight union, which cap is provided with two pins on its inner side to  
35 form the permanent cover to the aperture. The said cover has cast or fastened to the centre thereof a tube or rod of metal five inches long or other suitable  
40 length the purpose of which will be hereafter described. I now provide one or two rings of two inches diameter or other suitable size of any suitable metal or material from which four or more

pieces of steel spring or wire arise, the  
said springs being curved to form a support to the funnel hereafter described. I now take two metal or other material  
cups which shall be slightly tapered to fit the before described ring or rings,  
the bottom of the said cups shall have in them such number of holes which  
shall permit liquid to flow through, also if necessary a fine sheet or disc of gauze  
may be placed between the said cups in order to provide a filter if required.  
Also being held between the two cups is a funnel composed of oiled silk, rubber,  
leather, or any other suitable material which said funnel is provided with small  
recessed fasteners which fit into the ends of the before mentioned springs which  
said springs are provided with corresponding sized knobs or projections to receive the same and hold it in position,  
the tops of the springs may be bent over to secure the top edge of the said  
funnel. If required the two cups and the lower portion of the collapsible  
funnel with or without the gauze may be held firmly together by means of a  
small nut and bolt passing through a hole placed in the centre of the said  
cups. Below which and pressing upon the said funnel I provide a spiral spring,  
the lower portion of which shall rest upon a cup or ring attached to the  
bottom of the tube by means of a thread or other suitable means. Above the said  
spring shall be placed the before described collapsible funnel to be driven  
by the spring, before described, to the upper part of the said tube.

The manner in which the funnel is used is briefly as follows:—The whole  
funnel having been screwed into position in the tank or container, when  
necessary to bring the invention to use

I proceed to remove by means of a turn the bayonet held cap which shall supersede & render unnecessary the original cover or cap of the container the centre portion of which has been resting upon the upper inner portion of the collapsible funnel and the spiral spring causes the said funnel to rise from the interior of the tube and the other springs when released from the side of the tube spread out and carry with them the before described collapsible funnel ready for immediate use, after which I replace the funnel by pressing down with the before

described central tube or rod the whole of the funnel and its springs to its original position within the tube and fasten the same within the said tube by means of the bayonet joint in the cap, these being previously described. I do not propose to limit the use or purpose of this funnel to motor cars, bicycles or vehicles but to apply the same to any other container which shall need a guide or channel to convey liquid, powder or any other material to any part.

Dated the 23rd day of April, 1924.

LESLIE LYNE DIXON.

### COMPLETE SPECIFICATION.

#### Improvements in and relating to Collapsible Filling Funnels for Tanks and other Containers.

I, LESLIE LYNE DIXON, of Elmstone House, Ramsgate, in the County of Kent, a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises a collapsible funnel adapted to be applied to tanks and other containers for filling same with liquid, powder or other material, for example to the liquid fuel container of automobiles.

The invention involves the use of a housing or tube attachable to the container and containing a normally contracted funnel member which will automatically expand on removal of a closing cap or the like and according to this invention the housing or tube is normally applied to the filling aperture within the container and the funnel will automatically expand to present an open mouth of considerably greater diameter than said aperture in order that the liquid or other material may be filled into the container without spilling or splashing.

The invention also comprises other details of construction, arrangement and combinations of parts as set forth in appended claims and hereinafter fully described with reference to the accompanying drawings in which,

Fig. 1 is an exterior elevation of the device with the parts collapsed or out of use; Fig. 2 is a vertical central section through said device and Fig. 3 is an exterior elevation with the parts in position for use in filling the container.

As shown in the drawings the device comprises a tube *a* of a diameter suitable for fitting within the aperture in the tank or container and of a sufficient

length to contain the various parts hereinafter described consistent with the available depth in said container. The tube *a* is suitably exteriorly threaded at *a*<sup>1</sup> to screw into the container aperture and adjacent its upper end and interiorly thereof is provided with a shoulder or flange *a*<sup>2</sup> to form an abutment to prevent the collapsible and expansible funnel hereinafter described passing outwards beyond the desired position. Above the threaded portion *a*<sup>1</sup> the tube is provided with an external flange *a*<sup>3</sup> which has formed in its side two slots *a*<sup>4</sup> (one shown in Fig. 3) to form a bayonet joint for a closing cap *b* which is provided with pins *b*<sup>1</sup> engaging said slots; or any other appropriate form of fastening for the cap may be adopted, there being preferably provided a disc or washer of resilient material between the upper edge of the tube and the interior of the cap to secure a close union.

The cap *b* has formed integrally therewith or connected thereto a central tube or rod *b*<sup>2</sup> (shown solid in Fig. 2) which extends into the tube *a* for a considerable distance, say for about two thirds of its length, said rod retaining in inoperative position the operative parts of the device as explained later.

Slidable within the tube *a* are also provided two collars *c*, *c*<sup>1</sup> as of metal between which are secured the inner ends of a suitable number of, for instance, four strips of spring steel or wire *d* which are curved or shaped to form supports or ribs for the flexible funnel material *d*<sup>1</sup>, and fitting into the said collars *c*, *c*<sup>1</sup> is a ring or cup *d*<sup>2</sup> which is slightly tapered as at *d*<sup>3</sup> to fit the rings and grip between them the lower end of said funnel material *d*<sup>1</sup>, this material being for

example oiled silk, rubber, leather or any other convenient substance which will not be detrimentally acted on by the liquid with which it is to be used. The collars *c*, *c'* and the springs *d* are secured together as by rivets *d'*, and the cup is provided with apertures as *d''* to permit passage of the liquid therethrough. At its upper end or edge the funnel material *d'* is provided with fasteners which may be in the form of small screws *e* for attachment to the outer ends of the aforesaid ribs or strips *d*. Other forms of attachment such as recessed fasteners fitting into forked ends of the ribs or engaging knobs thereon could be used or the upper ends of the ribs could be bent over to hold the edge of the funnel material in position.

Below the cup *d''* is another cup *f* secured to cup *d''* by means of a screw or bush *g* and slidable in the tube *a*, the cup *f* bearing against the lower ends of the collars *c*, *c'*, this cup *f* being apertured as at *f'* for passage of the liquid and being under the action of a helical spring *f''* which tends to force it, and consequently the whole of the parts including the funnel, upwards or outwards with the cup *d''* in contact with the rod *b''* of the cap *b*. The lower end of the spring bears upon a ring *g* screwed into the lower end of the tube *a* and if required there may be applied to said lower end a sheet or disc of fine gauze *h* or the like to act as a filter for the liquid, this disc being secured to the ring *g* as by screws *h'*, or by bayonet fitting or similar device.

The operation of the device described above is as follows:—

The whole device having been screwed into position in the tank or container, when desired for use, the cap *b* is detached and the central rod *b''* thereof is thus removed from its restraining influence on the parts within the tube *a*, thus permitting the spring *f''* to force the collapsible funnel out of the tube and the ribs *d* when released to expand the funnel material into the position shown in Fig. 3 ready for immediate use. After use the funnel is replaced by pressing down on the cup *d''* with the central rod of the cap whereby the entire funnel and its ribs and other parts of the device are returned to normal position against the action of the helical spring *f''* and the cap is secured by the bayonet joint or other means provided.

If required there may be added to the device a level indicator shown in the form of a float *i* attached to a rod *i'* passing through the bush *i''* fixed to and movable with the cups *d''* and *f*, and provided at its upper end with a knob or bob *i'''* which will appear in the base of the funnel. By observing the rise of said knob *i'''* an indication when the container is full or nearly so will be given.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a funnel for tanks and other containers comprising a member normally contained in collapsed condition within a housing applied to an aperture of the tank and adapted to automatically expand on release of closing means, the construction in which said member lies normally within the container and on removal of the closing means expands to present an open mouth of considerably greater diameter than the filling aperture in order that liquid or other material may be readily filled into the container.

2. A filling funnel as in Claim 1 in which the funnel member is formed of flexible material carried by spring ribs or supports and is under the action of a spring adapted to force it out of its housing and permit the ribs to expand it to enlarged diameter.

3. A filling funnel as in Claim 2, in which the supporting ribs or supports are attached to rings and the funnel material to a cup apertured for passage of the material, said rings and cup being slidable in the housing and under the action of a helical spring tending to force them towards the outer end of said housing.

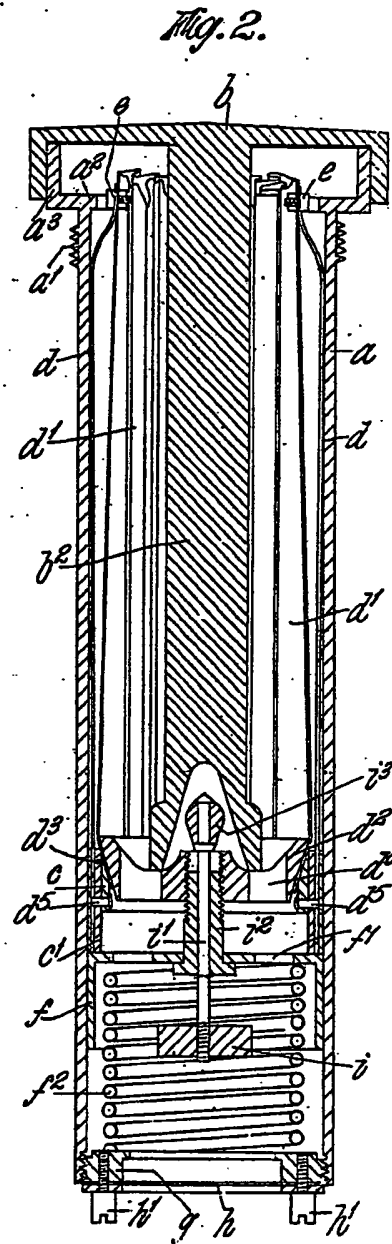
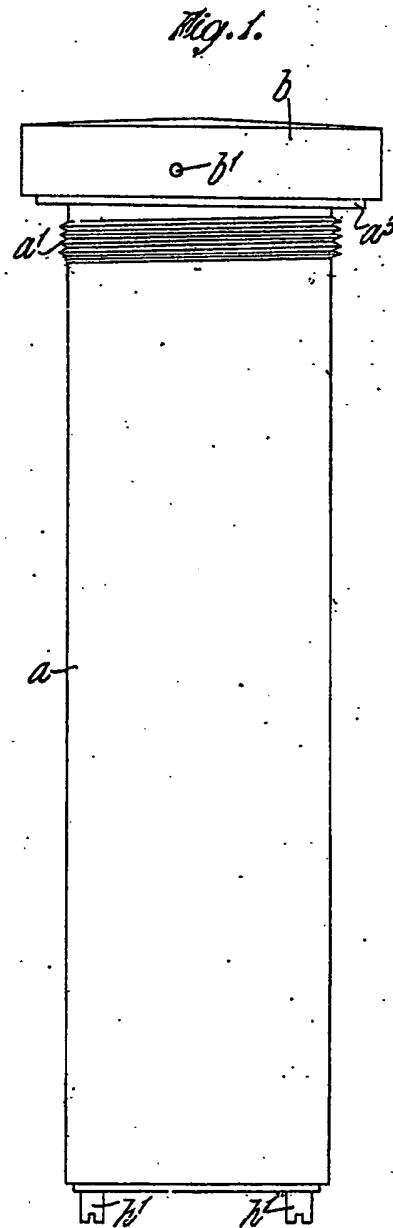
4. A filling funnel as in any of the preceding claims combined with a level indicator movable into and out of operative position with the funnel member.

5. A filling funnel for tanks and other containers having its parts, combined arranged and adapted for operation substantially as hereinbefore specified.

Dated this 10th day of September, 1924.

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[This Drawing is a reproduction of the Original on a reduced scale]



2 SHEETS

SHEET 2

SHEET 1

Fig. 3.



AAAA

-a

-d

-d'

-e

-f

-g

-h

-i

-j

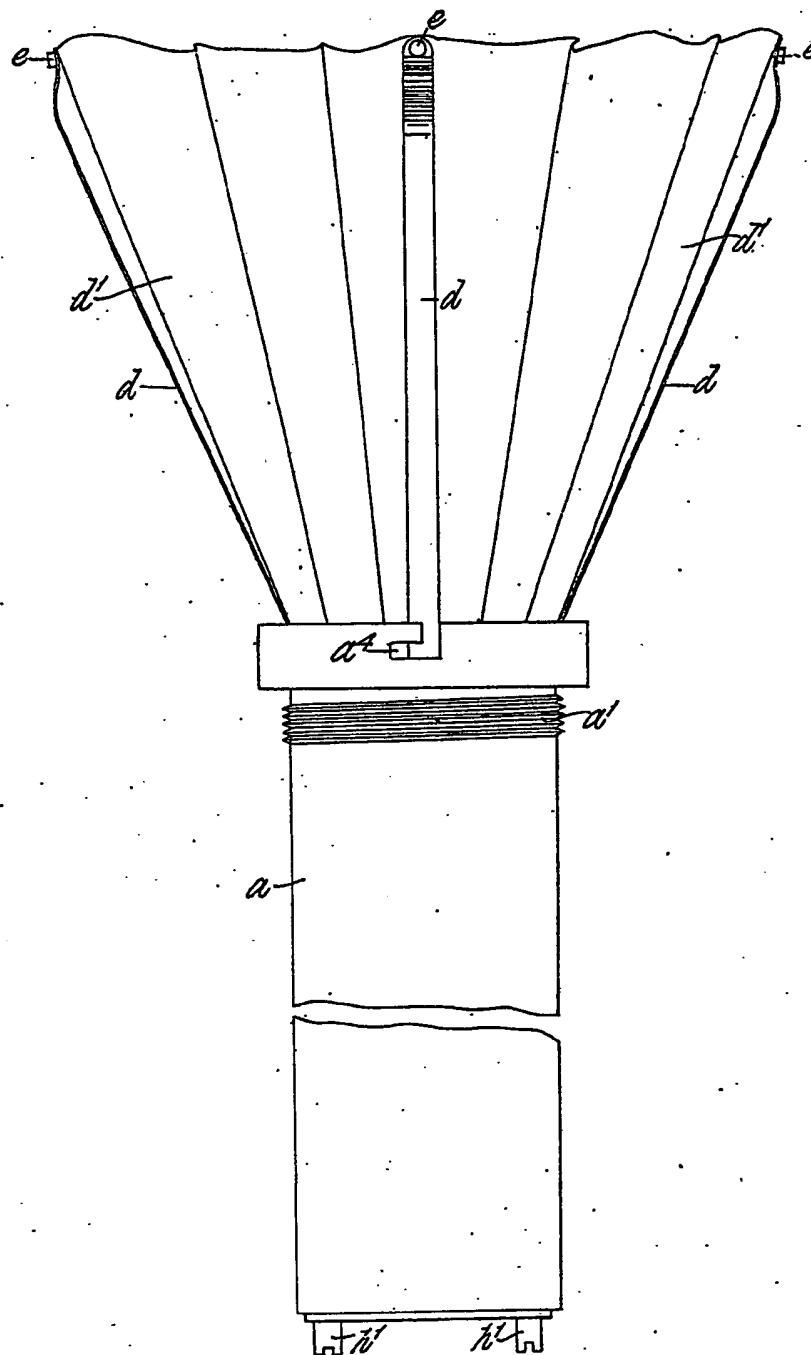


Fig. 3.

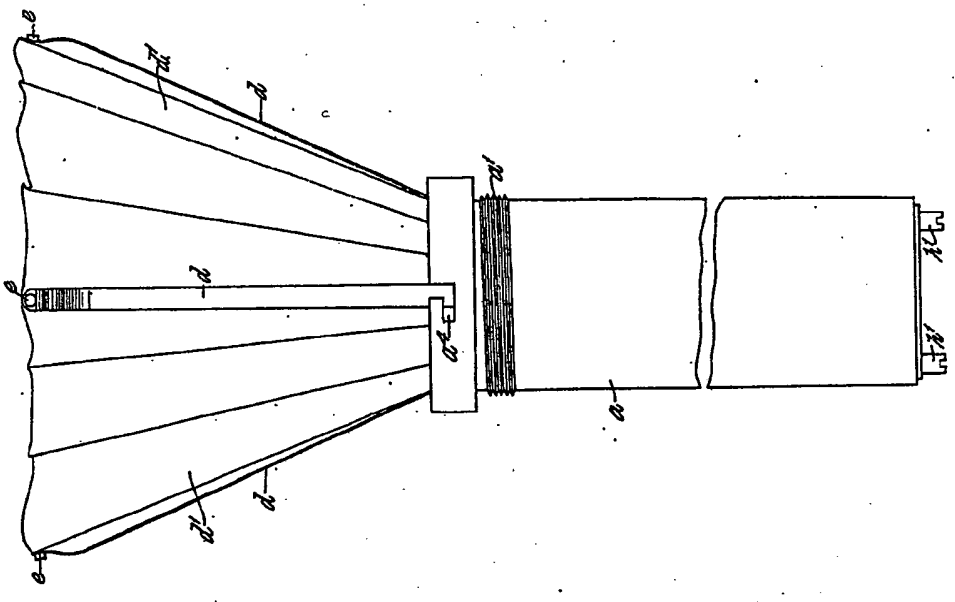


Fig. 2.

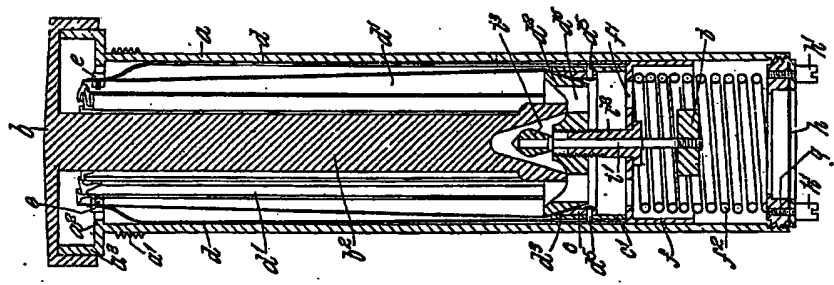
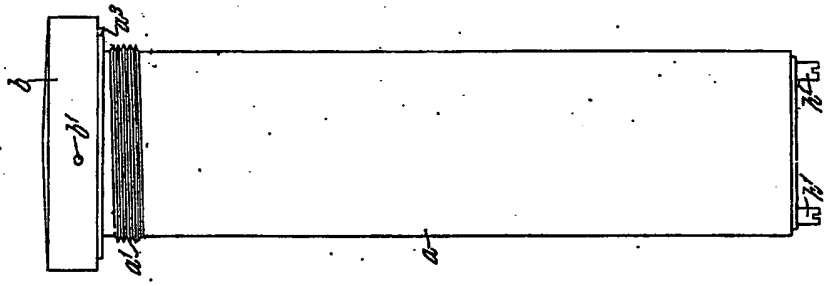


Fig. 1.



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